

IN THE CLAIMS:

1 1. (CURRENTLY AMENDED) In a data network comprising a plurality of nodes, a
2 method for transferring data packets between a source node and a destination node con-
3 tained in the network, wherein the source node and destination node belong to the same
4 virtual-local-area network (VLAN), the method comprising the steps of:

5 | establishing a virtual port associated with the destination node, the virtual port
6 | supporting a plurality of connections, ~~and a particular connection associated with the vir-~~
7 | ~~tual port and the VLAN;~~

8 | acquiring a data packet from the source node, wherein the packet is associated
9 | with the VLAN and contains a destination address associated with the destination node;
10 | and

11 | transferring the packet to the destination node over the particular connection via
12 | the virtual port.

1 | 2. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 1 comprising the step
2 | of:

3 | applying a port identifier (ID) associated with the virtual port to an interface de-
4 | scriptor block (IDB) database to identify an IDB database entry associated with the vir-
5 | tual port.

1 | 3. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 2 wherein the identi-
2 | fied IDB database entry contains a VLAN ID that represents the VLAN associated with
3 | the packet.

1 | 4. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 1 wherein the packet
2 | contains a VLAN ID that represents the VLAN associated with the packet.

1 | 5. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 1 comprising the steps
2 | of:

3 | applying the destination address contained in the packet and a VLAN ID that
4 | identifies the VLAN associated with the packet to a forwarding database to locate a for-
5 | warding database entry that contains (i) a destination address that matches the destination
6 | address contained in the packet and (ii) a VLAN ID that matches the VLAN ID that iden-
7 | tifies the VLAN associated with the packet; and
8 | identifying a virtual port associated with the destination node using a port identi-
9 | fier contained in the matching forwarding database entry.

1 | 6. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 1 comprising the steps
2 | of:

3 | applying a port identifier (ID) associated with the virtual port to an interface de-
4 | scriptor block (IDB) database to identify an IDB database entry associated with the vir-
5 | tual port;
6 | locating a virtual port (VPORT) VLAN database using an address contained in
7 | the IDB database entry;
8 | applying a VLAN ID that identifies the VLAN associated with the packet to the
9 | VPORT VLAN database to locate a VPORT VLAN database entry that contains a VLAN
10 | ID that matches the VLAN ID that identifies the VLAN associated with the packet;
11 | encapsulating the packet; and
12 | transferring the encapsulated packet over a particular connection identified by a
13 | connection ID contained in the matching VPORT VLAN database entry.

1 | 7. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 6 wherein the packet is
2 | encapsulated in accordance with the Institute of Electrical and Electronics Engineers
3 | (IEEE) 802.1Q standard.

1 | 8. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 6 comprising the steps
2 | of:

3 | acquiring the encapsulated packet;
4 | decapsulating the acquired encapsulated packet to yield the original packet;
5 | applying the destination address contained in the original packet to an address
6 | translation database to determine if the destination address matches an internal address
7 | contained in an entry in the database; and
8 | if so, replacing the destination address in the original packet with an external ad-
9 | dress contained in the matching entry.

1 | 9. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 1 wherein the particu-
2 | lar connection is a point-to-point protocol (PPP) connection.

1 | 10. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 1 wherein the par-
2 | ticular connection is an Asynchronous Transfer Mode (ATM) virtual connection (VC).

1 | 11. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 1 wherein the par-
2 | ticular connection is a frame relay connection.

1 | 12. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 1 wherein the par-
2 | ticular connection is a trunked connection.

1 | 13. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 1 wherein the par-
2 | ticular connection is associated with a connection identifier (ID).

1 | 14. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 13 comprising the
2 | step of:
3 | identifying an entry in a VLAN ID database that contains a virtual connection
4 | (VC) ID that matches the connection ID.

1 | 15. (CURRENTLY AMENDED) A~~The~~ method as defined in claim 13 comprising the
2 steps of:

3 | acquiring an encapsulated packet on the particular connection;
4 | identifying an internal VLAN ID associated with the particular connection's ID;
5 | and
6 | doubly encapsulating the encapsulated packet wherein the doubly encapsulated
7 | packet contains the internal VLAN ID.

1 | 16. (CURRENTLY AMENDED) A~~The~~ method as defined in claim 15 wherein the dou-
2 bly encapsulated packet is encapsulated in accordance with the Institute of Electrical and
3 Electronics Engineers (IEEE) 802.1Q standard.

1 | 17. (CURRENTLY AMENDED) A~~The~~ method as defined in claim 15 comprising the
2 steps of:
3 | applying a destination address contained in the doubly encapsulated packet to an
4 | address translation database to determine if the destination address matches an external
5 | address contained in an entry in the address translation database; and
6 | if so, replacing the destination address contained in the doubly encapsulated
7 | packet with an internal address contained in the matching entry.

1 | 18. (CURRENTLY AMENDED) In a data network comprising a plurality of nodes, a
2 method for transferring data packets between a source node and a destination node con-
3 tained in the network, wherein the source node and destination node belong to the same
4 virtual-local-area network (VLAN), the method comprising the steps of:
5 | generating a data packet at the source node, wherein the data packet contains a
6 | destination address associated with the destination node;
7 | transferring the packet to a source intermediate node contained in the network;
8 | at the source intermediate node, (i) acquiring the packet, (ii) identifying a VLAN
9 | associated with the packet, (iii) identifying a virtual port through which the destination

10 | node may be reached, the virtual port supporting a plurality of connections, (iv) identify-
11 | ing a particular connection that is associated with the virtual port and the packet's VLAN,
12 | and (v) transferring the packet over the particular connection via the virtual port to a des-
13 | tination intermediate node contained in the network; and

14 | at the destination intermediate node, (i) acquiring the packet, (ii) identifying a port
15 | through which the destination node may be reached and (iii) forwarding the acquired
16 | packet to the destination node.

1 | 19. (CURRENTLY AMENDED) A method as defined in claim 18 comprising the step
2 | of:

3 | at the source intermediate node, encapsulating the packet.

1 | 20. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 19 wherein the
2 | packet is encapsulated in accordance with the Institute of Electrical and Electronics Engi-
3 | neers (IEEE) 802.1Q standard.

1 | 21. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 18 wherein the par-
2 | ticular connection is a point-to-point protocol (PPP) connection.

1 | 22. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 18 wherein the par-
2 | ticular connection is an Asynchronous Transfer Mode (ATM) virtual connection (VC).

1 | 23. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 18 wherein the par-
2 | ticular connection is a frame relay connection.

1 | 24. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 18 wherein the par-
2 | ticular connection is a trunked connection.

1 | 25. (CURRENTLY AMENDED) An intermediate node comprising:

2 a line card coupled to a network wherein the line card is configured to acquire
3 data packets containing destination addresses; and

4 a processor configured to (i) establish one or more virtual ports wherein each vir-
5 tual port is associated with ~~one or more~~ a plurality of connections and each connection is
6 associated with a virtual-local-area network (VLAN), (ii) associate an acquired packet
7 with a VLAN, (iii) identify a virtual port associated with a destination address contained
8 in the acquired packet, (iv) identify a particular connection associated with the VLAN
9 and (v) transfer the packet over the particular connection via the virtual port.

1 26. (CURRENTLY AMENDED) ~~An~~ The intermediate node as defined in claim 25
2 wherein the connections are a combination of connection types.

1 27. (CURRENTLY AMENDED) A apparatus for transferring data packets between a
2 source node and a destination node contained in a data network, wherein the source node
3 and destination node belong to the same virtual-local-area network (VLAN), the appara-
4 tus comprising:

5 means for establishing a virtual port associated with the destination node, the vir-
6 tual port supporting a plurality of connections, and a particular connection associated
7 with ~~the virtual port and the~~ VLAN;

8 means for acquiring a data packet from the source node, wherein the packet is as-
9 sociated with the VLAN and contains a destination address associated with the destina-
10 tion node; and

11 means for transferring the packet to the destination node over the particular con-
12 nection via the virtual port.

1 28. (CURRENTLY AMENDED) A computer readable medium comprising computer
2 executable instructions for execution in a processor, the medium comprising instructions
3 for:

4 establishing a virtual port that is associated with a destination node, contained in a
5 data network, the virtual port supporting a plurality of connections, and a particular con-
6 nection associated with a virtual-local-area network (VLAN) and the virtual port;
7 acquiring a data packet wherein the packet is associated with the VLAN and con-
8 tains a destination address associated with the destination node; and
9 transferring the packet to the destination node over the connection via the virtual
10 port.